

Remarks

The Office Action dated July 15, 2010 has been received and carefully reviewed. The following remarks form a full and complete response thereto. Claims 1-12 are pending. Claims 1-2, 5-6, and 9-11 have been amended. Support for the amendments can be found in the pending application at, [inter alia](#), paragraphs [0032]-[0039] and figures 2 and 7. No new matter has been entered. Applicants respectfully request favorable reconsideration of the application in view of the following amendments and remarks.

Claims 1, 2, 4, 5, 6, 8, 9, 10 and 12 are not obvious in view of Ziakovic et al. and Baraff et al.

Claims 1, 2, 4, 5, 6, 8, 9, 10 and 12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,968,297 to Ziakovic et al. ("Ziakovic") in view of non-patent literature "Large Steps in Cloth Simulation," authored by Baraff and Witkin ("Baraff"). Neither Ziakovic nor Baraff, taken alone or in combination, disclose each and every element of the claimed invention. Applicants traverse this rejection.

Claim 1 defines a method for simulating wearing of a knit garment on a human model. The knit garment is a virtual knit garment and has a plurality of connected parts. The human model is a three-dimensional human model and is comprised of a plurality of polygons. The method includes a step of providing the human model with a plurality of axes. The method further includes a step of expanding the connected parts of the knit garment to form connected tubular parts of the knit garment. The method further includes a step of matching each of the connected tubular parts of the knit garment with any of the plurality of axes, while keeping the parts tubular, so as to make the each of the connected tubular parts surround said any of the plurality of axes and temporarily position the knit garment with respect to the human model. The method further includes a step of shrinking the temporarily positioned knit garment toward the axis matched with each of the connected tubular parts of the knit garment in a peripheral direction such that for each one of the connected tubular parts, at least one of (a) a portion of the one connected tubular part contacts said human model, and (b) a number of stitches per length of said one connected tubular part reaches a predetermined value, so that when the knit garment is

worn on the human model each of the connected tubular parts appears outside the human model. Claim 5 is a means plus function claim that is virtually identical to claim 1.

Claim 9 defines a computer program product, comprising a computer readable medium having a computer readable program code embodied therein. The computer readable program code is adapted to be executed by processor to implement a method for simulating wearing of a knit garment on a human model. The knit garment is a virtual knit garment having a plurality of connected parts. The human model is a three-dimensional human model and is made up of a plurality of polygons. The method includes a step of storing positions of a plurality of axes provided on the human model. The method further includes a step of expanding the connected parts of the knit garment to form connected tubular parts of the knit garment. The method further includes a step of matching each of the connected tubular parts of the knit garment with any of the plurality of axes, while keeping the parts tubular, so as to make each of the connected tubular parts surround any of the plurality of axes. The method further includes a step of temporarily arranging each of the connected tubular parts, within a three-dimensional space, with respect to the matching axis. The method further includes a step of shrinking each of the connected tubular parts in a peripheral direction toward the matching axis such that for each one of the connected tubular parts, at least one of (a) a portion of said one connected tubular part contacts the human model, and (b) a number of stitches per length of said one connected tubular part reaches a predetermined value, so that each of the connected tubular parts appears outside the human model. According to the method the knit garment which is temporarily positioned with respect to the axes is shrunk toward the axis matched with each of the connected tubular parts and worn on the human model.

The present invention, as described above, is directed to the positioning of a virtual garment on a human model while the virtual garment is intact, i.e., while the tubular parts of the garment are connected (as recited in claims 1, 5, and 9). In particular, each of the independent claims recites:

matching each of the connected tubular parts of the knit garment with any of the plurality of axes, while keeping the parts tubular, so as to make the each of the connected tubular parts surround said any of the plurality of axes and temporarily positioning the knit garment with respect to the human model

(emphasis added). This limitation is not taught or suggested by the prior art references cited by the Office Action.

The prior art cited by the Office Action is directed to two distinct phases of simulating how garments are worn on human models. Ziakovic addresses an initial positioning phase where the virtual garments are positioned to or temporarily worn on human models. However, Ziakovic teaches that the virtual garment is positioned on the human model in several unconnected pieces that are later joined along the seam lines. See Ziakovic at Col. 2, Lns. 38-58. Specifically, the Summary of the Invention of Ziakovic states that “[t]he invention provides a method of viewing a garment made up of garment pieces on a virtual dummy...” See Ziakovic at Col. 2, Lns. 38-39 (emphasis added). The Summary of the Invention goes on to state that:

In the invention, the pieces are firstly “painted” on the surface of the dummy so that they are touching, without taking account of the geometrical shape or of the physical behavior of the fabric. In other words, the pieces are pressed against the dummy. For this step, the pieces are deformed continuously, without tearing or intersection. They are then “sewn”, by geometrical proximity.

See Ziakovic at Col. 2, Lns. 52-58 (emphasis added). This disclosure of the placement of unconnected garment pieces in no way teaches or suggests the placement of the connected tubular parts of the knit garment on the axes of a human model, as recited in the claimed invention. In fact, one of ordinary skill in the art would have been discouraged from using a fully connected garment by the disclosure of Ziakovic. For this reason, not only does Ziakovic not teach or suggest the claimed invention, it actively teaches away from the claimed invention. “It is improper to combine references where the references teach away from their combination.” See MPEP § 2145 (citing In re Grasselli, 713 F.2d 731, 743 (Fed. Cir. 1983)).

Further, Baraff in no way addresses the initial positioning phase, but rather describes a second phase in which the positioned garments are deformed or relaxed such that a realistic appearance of the virtual garment is achieved. In this second phase, forces that would normally act on the garment (e.g., gravity, friction, and various tensions in the garment) are calculated and applied to the positioned garment. For this reason, Baraff fails to cure the above discussed deficiency of Ziakovic. For at least the reasons discussed above the combination of Ziakovic and Baraff fails to render claims 1, 5, and 9 obvious. Additionally, because claims 1, 5, and 9 are not

obvious in view of the prior art, dependent claims 2-4, 6-9, and 10-12 are likewise not obvious in view of the prior art. Applicants respectfully request that the current rejection be withdrawn.

Claims 3 and 7 are not obvious in view of Ziakovic, Baraff, and Official Notice.

Claims 3 and 7 have been rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Ziakovic in view of Baraff and further in view of Official Notice, as supported by U.S. Patent No. 4,306,429 to Warsop. Applicants again assert that the Examiner's Official Notice is improper at least for the reason that it is unsupported by Warsop. Applicants traverse the entirety of this rejection.

The Office Action takes Official Notice that "having a stitch on a virtual or actual garment be arranged or re-arranged along the course or whale [sic] direction is well known in the garment art." See Office Action pg. 10. To support this Official Notice, the Office Action proffers Wasop as evidence.

Wasop discloses a "stitch bonded fleece fabric" including, among other features, a "back bar structure . . . [that] extends over at least two adjacent wales of the front bar structure." Wasop at col. 3, ll. 42-44. Wasop may arguably support a proposition that "courses" and "wales," as structural components of knit garments, are well known in the garment art. Indeed, knitting artisans have understood the terminology of courses and wales for many years, if not for centuries. However, it is undeniable that Warsop is directed to the actual physical construction of an actual physical fabric, and in no way addresses the concerns of simulating a knit garment. It is these concerns, e.g., rearranging simulated stitches in a simulated garment, which the current invention is directed to.

The use of Warsop is improper and inadequate to support the asserted Official Notice, for at least the reason that Warsop in no way discloses any form of arranging or re-arranging stitches in a virtual garment. Official Notice does not excuse the Office from performing its duties, but rather provides a way for the Office to make rejections based on "facts asserted to be well-known, or to be common knowledge in the art [that] are capable of instant and unquestionable demonstration as being well-known." See MPEP § 2144.03. It is made clear by the Office Action's citation of Warsop that the Official Notice is, in fact, not "capable of instant and unquestionable demonstration as being well-known." Applicants respectfully request that the Official Notice be support be adequate evidence or immediately withdrawn. Because the

Official Notice is improper, the rejection of claims 3 and 7 is likewise improper and Applicants request that it be immediately withdrawn.

Conclusion

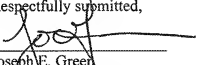
In view of the above, all rejections have been sufficiently addressed, and reconsideration is requested. The Applicants submit that the application is now in condition for allowance and request that all pending claims be allowed and this application passed to issue.

In the event that this paper is not timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account No. 02 2135.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

Respectfully submitted,

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